

THE MINERAL INDUSTRY OF ALBANIA

By Walter G. Steblez

Chromite, copper, ferrochromium, nickeliferous iron ore, and petroleum refinery products were the chief mineral commodities that have been produced in Albania and, which until recently, constituted the dominant component of foreign exchange earnings. During the early 1990's, fundamental political, social, and economic changes began to emerge in the former centrally planned countries of Eastern Europe, which lead to the gradual development of market-based economic structures and democratic social and political organizations. To stimulate the development of the domestic market and promote foreign investment, the Government of Albania adopted a new mining code and new laws and regulations concerning foreign investment. The changes in the country's economic and political system generated foreign investment interest in the country's minerals industry. Since 1992, various foreign joint-venture and joint-exploration proposals with respect to the country's chromite, copper, petroleum deposits and processing facilities have been studied by Albania's mining authorities.

The environmental landscape of Albania is similar in kind, but not in degree, to that of other former centrally planned economy countries of Eastern Europe that were former members of the Council for Mutual Economic Assistance (CMEA). The more serious point sources of environmental pollution were industrial sites, such as mining, beneficiation, smelting and refining complexes (chromite, copper, iron ore, etc.), the Elbasan iron and steel plant, petroleum refineries, lignite-fired thermal electric power stations, and chemical plants.¹ With technology even further out of date than that at similar facilities in former CMEA countries, Albania's industrial facilities were not only less efficient than those in other Eastern European countries, but also more polluting. The chief distinction between heavy industry in Albania and that in other former Eastern European members of CMEA was that of scale, with Albania's industrial development having been significantly less extensive than that in the former CMEA countries. Consequently, the environmental pollution generated by domestic industries in Albania from 1950 to 1992 has been relatively minor. Moreover, relatively large areas of the country have been described as being entirely unaffected by environmental pollution.

Since the near total collapse of Albania's centrally planned economy in 1992, the mineral industry's production in all sectors and stages of operation remained marginal. Additionally, technical difficulties contributed to a decline in

Albania's mining sector. These problems pertained largely to shortages of spare parts as well as the need for modern mining equipment. From 1986 to 1990, total capital invested in the minerals industry amounted to less than 2% of the total invested in Albania's economy during this period.² Substantial future gains in Albania's mineral output would depend largely on decisions regarding the overall direction of the country's economic development. (*See table 1.*)

In 1995, Albania's mineral industry remained entirely state-owned and operated. Table 2 lists the administrative bodies as well as subordinate units of production of the main branches of the country's mineral industry. The economic viability of many of these facilities may be doubtful and the final organizational structure of the industry must still be determined. (*See table 2.*)

Metal ores have been Albania's chief source of mineral wealth. Apart from the commodities reviewed in this report, Albania reportedly possesses numerous known, but undeveloped, alluvial deposits of heavy sands, containing zirconium and rare earths, as well as rutile and ilmenite.

Albania's bauxite deposits are mainly in the central part of the country, just east of Tirana, the country's capital, as well as in the Northern Alpine region near the former Yugoslav border. Bauxite reserves were estimated at about 12 million metric tons (Mt). The largest deposit at Daijti was reported to contain approximately 8 to 9 Mt of reserves with an average grade of 39% to 40% aluminum oxide, 13% silica, 6% sulfur, 4% to 5% calcium oxide, and 18.3% iron oxide. Only 50,000 to 60,000 metric tons per year (t/yr) of bauxite, reportedly, have been mined near Prrenjas, in the Librazhd District. Because of a lack of domestic alumina refining and aluminum smelting capacity, this limited quantity of domestically mined bauxite has been entirely designated for export.

Albania's chromite mining operations were the most important component of its mineral industry. From the late 1970's through the 1980's, Albania had been a leading world producer and exporter of chromite, usually ranked second in terms of exports and third in terms of production. Exports of chromite and ferrochromium have been vital earners of foreign exchange.

Although some chromite deposits and outcroppings can be found throughout Albania, the country's principal commercial chromite deposits are in the north-central and northern parts

of the country in ultrabasic massifs in the Midrita area. The mainly podiform ore was mined at seven mining districts, of which Bulquize and Batra, about 30 kilometers (km) northeast of Tirana, represented about two-thirds of Albania's total production capacity. Albanian ore graded from 18% to 43% chromium oxide (Cr_2O_3). Lumpy ores grading 39% to 42% Cr_2O_3 and concentrates grading from 50% to 53% Cr_2O_3 have been designated for export. About 25% of the ore was suitable for direct shipment; the balance was divided equally for beneficiation and for shipment as feedstock for the Burrel ferrochromium plant. In recent years, chromite extraction had become more difficult because of the declining availability of ore suitable for open pit mining; the increasingly complex mining environment at underground operations, especially at the Bulquize Mine; and the need for modern machinery and equipment. However, the rapid decline in output from 1991 to 1993 largely was the result of the political revolution that occurred in the country during this period, followed by a rapid movement of the labor force away from many heavy industrial operations, including those in the mining and mineral processing sphere.

The situation in Albania's chromite mining and processing sector in 1994 and 1995 showed some improvement compared with that of 1993. The rise in production, however, was from a significantly lower base of output in 1993, 282,000 metric tons (t), compared with the much higher levels of production, about 1.0-1.2 million metric tons per year (Mt/yr), attained in the 1980's and in 1990.

During the late 1980's, Albania's output of copper ore had been about 1 Mt/yr, grading between 1.5% to 4% copper. All copper ore was mined underground. With the exception of the Rehove Mine and beneficiation plant in southeastern Albania, copper was mined, processed, smelted, and refined largely in the northern part of the country. The largest copper mining and beneficiation complex at Fushe Arrez had produced more than 320,000 t/yr of ore during the late 1980's. As in other sectors of Albania's economy, the fall of production in the copper industry in the early 1990's was reported to be partly the outcome of a radical change in Government policy that allowed workers to freely change their place of employment.

After beneficiation, copper concentrates were smelted at the Rubic and Gjegjan (Kukes) and Lac pyrometallurgical primary smelters. Refineries and rolling mills at Rubic and Lac have produced copper wire, the major part of which was exported. Because Albania had few private telephones, only a limited amount of copper had been consumed by the country's telecommunications industry.

Albania's commercial resources of lateritic nickeliferous iron ore were estimated at about 300 Mt. Yearly output in the 1980's ranged from 1 to 1.2 Mt of ore, of which about one-half was consumed at the Elbasan iron and steel works to produce pig iron, a small amount of steel, and salts of nickel and cobalt. The balance of the iron ore had been exported, largely to Czechoslovakia, until 1993. During

several decades, Czechoslovakia had been the largest consumer of Albanian nickeliferous iron ore, with annual imports ranging from 200,000 to 350,000 t/yr of ore. Czechoslovakia processed Albanian ore at its Sered refinery, where nickel and cobalt were extracted. However, this refinery was closed in early 1993.

Deposits of commercial-grade nickeliferous iron ore were exploited in ultrabasic massifs, near Pogradec, in east-central Albania. The principal mines were at Prrenjas, Guri i Kuq, and Bitinska. The largest mining operation at Prrenjas in recent years produced about 600,000 t/yr of ore. The majority of Albanian ores are lateritic, grading about 35% to 45% iron, 1.4% nickel, and 0.05% cobalt. The Bitinsk deposit was believed to contain considerable resources of lateritic ore, as well as silicate ores, but only the lateritic material has been mined.

Production of ore reportedly had ceased in 1994, owing to both depressed international demand and dated and inefficient production technology, and remained moribund in 1995. This resulted in the corresponding closure of the Elbasan nickel and cobalt refinery, as well as a large quayside stockpile of ore at the port of Durres.³ Because of exposure to the elements, the quality of the ore in this stockpile reportedly had deteriorated during the past 2 years and was causing damage to the port's storage facilities.

From 1992 through 1993, the output of iron and steel at the Elbasan steel works, which was based on the use of domestic iron ore, declined sharply from the already low output levels of 1991, reportedly because of outdated and worn plant and equipment and the lack of available funds needed to import coking coal for the Elbasan steelworks. As a result, operations at the Elbasan iron-and-steelmaking facility during this period and through 1995 practically had ceased. Little data have been available relative to the future prospects of this operation.

During the 1980's, the trade returns of market economy countries showed occasional shipments of small lots of nickel matte, speiss, and nickeliferous residues. The construction of a nickel and cobalt plant at Elbasan was reported from about 1985. The completion of the plant, now closed, had been postponed for a number of years because of technical difficulties. However, it seemed fairly clear that some component of the Elbasan iron and steelworks, or of the new nickel and cobalt plant, has produced a commercially marketable grade of nickel carbonate for a number of years from domestic lateritic nickeliferous iron ores. This product has been exported to countries where it is used in much the same way as nickel oxide sinter--as a direct additive product in steelmaking. The same facility presumably produced cobalt salts, which also were destined for the export market.

Albania's industrial minerals sector remained in early stages of development. In recent years, Albanian officials indicated that future investment would be aimed at developing facilities to exploit the country's asbestos, fluorite, kaolin, magnesite, phosphate, and quartz deposits.

In view of the Government's efforts to initiate work on modernizing the country's infrastructure, these developments appeared to be probable. Albania also produced sufficient amounts of sand, gravel, and dressed stone to meet its domestic needs.

In September 1993, the Government of Albania reported that about \$18 million would be provided by the World Bank and \$8 million by Kuwait for the renovation of 85 km of the country's automobile road system. The project was developed with the assistance of the World Bank and would involve many domestic as well as some foreign enterprises.⁴ In the 1970's and early 1980's Albania produced lignite, hydroelectric power, natural gas, and petroleum in quantities that were sufficient for its relatively low domestic consumption and export. However, reduced hydroelectric power output resulting from several years of drought, a general downturn in petroleum production, and increasing indigenous energy requirements have caused Albania's energy status to become tenuous in recent years.

Albania's exploitable coal resources reportedly amounted to 158 Mt of low-calorie lignite. Lignite had been mined from thin seams, with reportedly outdated methods and a low level of mechanization. The entire output was consumed domestically, mainly at thermal electric power stations.

Albania has about 17,300 km of highways, railroads, and waterways. The railroad system consisted of 509 km of 1.435-meter standard-gauge track and 34 km of narrow-

gauge single track. The road system consisted of 6,700 km of highways and main roads and 10,000 km of forest and rural roads. About 60% of all domestic cargo was transported by truck, 35% by rail, and 2% by coastal shipping along the Adriatic Sea and sections of Lake Scutari, Lake Ohrid, and Lake Prespa. Nickeliferous iron ore mining areas at Prrenjas and Guri i Kuq were linked by rail to processing centers at Elbasan. The copper mining district at Shkoder was also rail-linked to the copper smelter and refinery at Lac. Albania has a 1,630-megawatt generating capacity, mostly from hydroelectric sources. The country's petroleum and natural gas sector had about 145 km of crude oil pipeline, 55 km of refinery products pipeline, and 64 km of pipeline for natural gas. Seaports were at Durres, Sarande, and Vlore, but most bulk-mineral cargoes were handled at Durres.

The future of the country's mineral industry in the context of market economics may depend on the Government's policies aimed at revitalizing the country's entire economy.

¹Albania: Building a New Economy, World Bank Report No. 12342-Alb, Washington, DC, 1994, pp. 70-79.

²FBIS May 27, 1993, p. 1; from ATA 1022 GMT May 26, 1993.

³Metal Bulletin, Nov. 5, 1992, p. 6; and, Mining Journal(London), Nov. 5, 1993, p. 315.

⁴SWB EEW/0299, Sept. 16 1993, P. WB1; from Gazeta Shqiptare, reported by ATA Sept. 7, 1993, 1015 GMT.

TABLE 1
ALBANIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/ METALS	1991	1992	1993	1994	1995 e/
Bauxite e/	20,000	4,000	2,000	2,000	1,000
Chromium:					
Chromite, gross weight e/ thousand tons	587	322	281 r/	223 r/	243 7/
Marketable ore do.	121	58	82	107 r/	129 7/
Concentrate do.	88	15	33	11 r/	31 7/
Ferrochromium do.	25	15	35 r/	33 r/	43 7/
Cobalt: e/					
Mine output, Co content 3/	600	20	10	--	--
Plant production, Co content 4/	15	3	1	--	--
Copper:					
Ore:					
Gross weight thousand tons	566	240	239 r/	277 r/	258 7/
Concentrate e/	16,500	4,000	14,000 r/	9,000 r/	17,000 7/
Cu content e/	3,700	900	3,200 r/	2,000 r/	3,800
Metal, primary:					
Smelter	4,800	2,300 r/	2,300 r/	2,000 r/	3,000 7/
Refined e/	4,400	1,500 r/	1,500 r/	1,000	1,000
Iron and steel:					
Iron ore, nickeliferous:					
Gross weight thousand tons	750 e/	200	150	--	--
Fe content e/ do.	350	88	85	--	--
Metal:					
Pig iron	50,000 e/	10,000	10,000	10,000	10,000
Crude steel e/	35,000	5,000	5,000	5,000	5,000
Rolled steel e/	30,000	1,000	1,000	1,000	1,000
Nickel: e/					
Mine output, Ni content	7,500	150	75	75	--
Plant production, Ni content	5,000	100	50	50	--
Metal, Ni cathode	2,200	50	20	20	--
INDUSTRIAL MINERALS					
Cement, hydraulic e/ thousand tons	600	200	200	200	200
Clay, kaolin e/	2,000	500	500	500	500
Dolomite e/	350,000	50,000	50,000	50,000	50,000
Fertilizer, manufactured: e/					
Phosphatic	75,000	10,000	10,000	10,000	10,000
Urea	25,000	4,000	4,000	4,000	4,000
Nitrogen, N content of ammonia e/	80,000	15,000	15,000	15,000	15,000
Olivinite	45,000 e/	300	300	300	300
Phosphate rock (12% to 15% P2O5) e/	9,000	1,500	1,500	1,500	1,000
Pyrite, unroasted e/	23,000	7,000	7,000	7,000	5,000
Salt e/	55,000	5,000	10,000	10,000	10,000
Sodium compounds n.e.s., soda ash, calcined e/	16,000	150	150	150	100
Sulfuric acid e/	50,000	1,000	1,000	1,000	1,000
MINERAL FUELS AND RELATED MATERIALS					
Asphalt and bitumen, natural e/ 5/ thousand tons	500	100	100	100	100
Coal, Lignite do.	1,100 e/	500	500	500	500
Gas, natural, gross production 6/ million cubic meters	170 e/	100	100	100	100
Petroleum:					
Crude:					
Gross weight thousand tons	700 e/	500	586 r/	535 r/	521 7/
Converted thousand 42-gallon barrels	4,670 e/	3,300	3,900 r/	3,500 r/	3,500
Refinery products e/	3,000	1,000	1,000	1,000	1,000

e/ Estimated. r/ Revised.

1/ Table includes data available through May 1996.

2/ In addition to the commodities listed, a variety of industrial minerals and construction materials (common clay, quartz, titanomagnetite, stone, and sand and gravel) are produced, but output is not reported quantitatively, and available information is inadequate to make reliable estimates of output levels.

3/ Calculated from reported and estimated weight of nickeliferous ore; the amount of cobalt recovered, if any, is conjectural.

4/ Figures represent cobalt content of estimated production of commercially marketable cobalt salts produced within Albania from domestically mined nickeliferous iron ore.

5/ Includes petroleum refinery produced asphalt and bitumen.

6/ Separate data on marketable production are not available, but gross and marketed output are regarded as nearly equal.

7/ Reported figure.

TABLE 2
ALBANIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1995

(Thousand metric tons unless otherwise specified)

Commodity	Location of main facilities (all state-owned)	Annual capacity
Cement	Elbasan, 32 kilometers southeast of Tirana; Kruje, 20 kilometers northwest of Tirana; Shkoder, 85 kilometers northwest of Tirana; and Vlore, southwest of Tirana	1,200
Chromite	Bater (including Bater I and II and Martanesh), 40 kilometers northwest of Tirana	450
Do.	Bulquize (including Bulqize south, Fush, Terrnove, and Todo Maco), 35 kilometers northwest of Tirana	450
Do.	Kalimash, 60 kilometers north of Tirana	250
Do.	Kam, 70 kilometers north of Tirana	100
Do.	Klos, 20 kilometers northeast of Tirana	50
Do.	Pogradec (including Katjell, Memelisht, Pojske, Pishkash, and Prrenjas), 50 kilometers east of Tirana	100
Ferrochromium	Burrel, 35 kilometers northeast of Tirana	40
Do.	Elbasan, 32 kilometers southeast of Tirana	36
Copper:		
Ore	Fushe-Arrez, 80 kilometers north of Tirana	350
Do.	Gjejan, 100 kilometers northeast of Tirana	150
Do.	Golaj (including Nikoliq and Pus), 120 kilometers northeast of Tirana	150
Do.	Kurbnesh-Perlat, 55 kilometers northeast of Tirana	100
Do.	Rehove, 110 kilometers southeast of Tirana	100
Do.	Reps (including Gurch, Lajo, Spac, and Thurr), 55 kilometers north of Tirana	350
Do.	Rreshen, 50 kilometers north of Tirana	50
Do.	Shkoder (including Palaj, Karma I and II), 85 kilometers northwest of Tirana	100
Smelter	Kukes, 110 kilometers northeast of Tirana	6
Do.	Lac, 35 kilometers northwest of Tirana	7
Do.	Rubik, 50 kilometers north of Tirana	4
Iron ore	Prrenjas (Bushtrica, Prrenjas, Skorska I and II), 70 kilometers southeast of Tirana	650
Do.	Guri i Kuq (including Cervenake, Grasishta, Guri i Kuq, Hudenisht and Guri Pergjrgjur), 25 kilometers east of Tirana	500
Steel	"Steel of the Party" Metallurgical Combine at Elbasan	150
Nickel, smelter	Elbasan	6
Coal, lignite	Maneze, Mezes, and Valias Mines in Tirana Durres area; Krabe Mine, 20 kilometers southeast of Tirana; Alarup and Cervnake Mines, in Pogradec area, 80 kilometers southeast of Tirana; Mborje-Drenove Mine in Korce area, 85 kilometers southwest of Tirana; and Memaliaj Mine in Tepelene area, 110 kilometers south of Tirana	2,500
Natural gas	million cubic feet Gasfields on southwest Albania between Ballsh and Fier	16,000
Petroleum:		
Crude	42-gallon barrels per day Oilfields at Marineze, Ballsh, Shqisht, Patos, Kucova, Gorrisht, and others	35,000
Refined	do. Refineries: Ballsh, Cerrik, Fier, and Stalin	33,000